How to be a Historically Motivated Scientific Anti-Realist

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Suppose one believes that the historical record of discarded scientific theories is good evidence against scientific realism. Should one adopt Kyle Stanford’s specific version of anti-realism, based on the Problem of Unconceived Alternatives (PUA)? This talk first presents reasons for answering this question in the negative, and then describes another version of historically motivated anti-realism that enjoys the virtues of Stanford’s account, without its shortcomings.

The primary problem with Stanford’s PUA-based argument is that it cannot use many of the prima facie strongest pieces of historical evidence against realism, namely (i) superseded theories whose successors were explicitly conceived, and (ii) superseded theories that were not the product of elimination-of-alternatives inferences. Examples of (i) include Ptolemy considering the hypotheses that the Earth moves on its axis and from place to place. One example of (ii) is the hypothesis that electrical resistivity is proportional to temperature cubed, prior to the discovery of superconductivity.

Stanford claims his PUA-based argument against realism is superior to the old-fashioned pessimistic induction (PI) because the PUA provides a reason why historical theories were wrong, when they were wrong. The PI is merely an enumerative induction, without providing any explanation of why past theories failed (which threatens the PI, because past and present theories are dissimilar—and without this explanation, we cannot determine whether these dissimilarities undermine the inductive inference). Thus I defend an alternative explanation of failed past theories, which supplements the PI: the reason past scientists accepted theories that are not approximately true was because the total body of evidence available at that time was unrepresentative or otherwise misleading. Ptolemy was rational to claim the Earth is stationary, because he observed no stellar parallax. And physicists in 1900 were rational to claim electrical resistivity was proportional to temperature cubed, because they lacked any evidence to the contrary.

The Scientific Realism Debate in the Year 2015: A New Era of Realist Criteria and Non-Realist Historical Challenges.
(I) The scientific realism debate has now reached an entirely new level of sophistication. Faced with increasingly focused challenges, realists have appropriately revised their basic meta-hypothesis that successful scientific theories are approximately true: in the last few years, realists have emphasized criteria that render contemporary realism far more selective, and hence more plausible, than it has previously been. (II) Mindful of these pivotal advances, I articulate a set of conditions that must be met for a selective realist criterion to be viable. I contend that it must be (a) relevant: to explain success, it must pick out constituents that are genuinely responsible, and so deserving of credit, for success; (b) ascertainable: to have any content at all, i.e., to inform us of what we can justifiably believe (and avoid the charge of ‘ad hocery’), it must allow identification of just which theoretical constituents qualify; (c) sufficiently realist: to go beyond anti-realism, it must pick out constituents that reach to a level deeper than the empirical data. (III) With these conditions in hand, I consider a set of realist criteria recently on offer. After briefly flagging some that fail to meet the above requirements, I nonetheless point to a set of selective realist criteria that live up to them. With the latter identified, however, I turn to survey a number of cases studies—from 20th century science—advanced as challenges to realism, and I offer a novel account of the nature of the historical threat to realism. I contend that the form and content of this novel challenge severely threaten even a fallible, conjectural variant of epistemic realism. (IV) I conclude on an positive note, however, arguing that scientific realism need not be rejected outright, that a number of its central realist tenets can be retained unproblematically even in the face of such epistemic threats.

Science’s Success. An Argumentative Analysis

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The paper presents an argumentative analysis of science’s success in the classical realism-antirealism debate in philosophy of science. In the first place, the frame of the problem is stated, placing the argument in the general context of the realism-antirealism debate. Secondly, the success of science is specified according to Putnam’s classic formulation (1975), and the meaning of the term “success” is furthermore analyzed according to the concepts of “explanation” and “prediction” proposed in the domain. Then the initial argument is rewritten accordingly, by substituting science’s success for it’s capacity to explain and predict. Furthermore some problems concerning explanation, prediction and inference to the best explanation are brought into attention, and also their connection to various controversial philosophical aspects involved in the scientific realism debate are considered: the underdetermination of theory by data, the distinction between theoretical and observational terms, etc. In the new version of the argument the different approaches and perspectives offered on the issue by various philosophers of science - Laudan, Latour, Woolgard, Niiniluoto, Devitt, Leplin, van Fraassen, etc. - are discussed and analyzed. The arguments
brought in favor or against scientific realism are to be analyzed taking into consideration the following aspects: the identification of some difficulties concerning the level of the language, and the necessity to clarify some of the terms involved, the types of arguments brought in the debate by each proponent. Then the arguments presented by both sides of the debate are to be evaluated. Finally, a short investigation concerning structural realism and its chance to be part of the solution in the debate will be offered.

Stanford’s New Induction as an Evolutionary Debunking Argument

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The problem of the Unconceived Alternatives (UA) (Stanford 2006) has shifted the focus of the debate on theory change from the theories to the theorists (Saatsi et al. 2009). In fact, the New Induction (NI) proposed by Stanford (2006) is based on the historical analysis of the theorists’ cognitive performances. Along this line the problem of the UA can be restated in evolutionary terms. Indeed, if knowledge is a human product, and humans are evolved biological organisms, then their ability in attaining true scientific theories must have evolutionary roots (Kornblith 2002). The problem is that “evolutionary approaches to the mind have given rise to two mutually incompatible positions” (De Cruz et al. 2011, p. 518): the first, supported by Evolutionary Arguments (EAs), contends that natural selection will lead to form beliefs that correspond with the state of the world; the second, supported by Evolutionary Debunking Arguments (EDAs) (Kahane 2011), denies such a claim. In this line of reasoning, it can be shown that the No Miracle Argument, normally used to support Scientific Realism (SR), is equivalent to an EA, while the NI can be described as an EDA. Recently Stanford’s argument has been criticized by Lyons (2013). It will be assessed if formulating the NI as an EDA may help in defending it from such criticisms. Taking evolution into consideration is indeed deemed to be a challenge to some philosophical intuitions on knowledge (Nozick 2001). What is at stake here is trying to determine whether evolutionary considerations support the epistemological view which underlie SR or undermine it.

References

De Cruz, H., Boudry, M., De Smedt, J., Blancke, S. 2011, “Evolutionary Approaches to Epistemic Justification”, Dialectica, 65, 517-535.


